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Infection fatality rate of COVID-19

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## Infection fatality rate of COVID-19 inferred from seroprevalence data

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### Abstract

**Objective** To estimate the infection fatality rate of coronavirus disease 2019 (COVID-19) from seroprevalence data.

**Methods** I searched PubMed and preprint servers for COVID-19 seroprevalence studies with a sample size  $\geq 500$  as of 9 September, 2020. I also retrieved additional results of national studies from preliminary press releases and reports. I assessed the studies for design features and seroprevalence estimates. I estimated the infection fatality rate for each study by dividing the number of COVID-19 deaths by the number of people estimated to be infected in each region. I corrected for the number of antibody types tested (immunoglobulin, IgG, IgM, IgA).

**Results** I included 61 studies (74 estimates) and eight preliminary national estimates. Seroprevalence estimates ranged from 0.02% to 53.40%. Infection fatality rates ranged from 0.00% to 1.63%, corrected values from 0.00% to 1.54%. Across 51 locations, the median COVID-19 infection fatality rate was 0.27% (corrected 0.23%): the rate was 0.09% in locations with COVID-19 population mortality rates less than the global average ( $< 118$  deaths/million), 0.20% in locations with 118–500 COVID-19 deaths/million people and 0.57% in locations with  $> 500$  COVID-19 deaths/million people. In people  $< 70$  years, infection fatality rates ranged from 0.00% to 0.31% with crude and corrected medians of 0.05%.

**Conclusion** The infection fatality rate of COVID-19 can vary substantially across different locations and this may reflect differences in population age structure and case-mix of infected and deceased patients and other factors. The inferred infection fatality rates tended to be much lower than estimates made earlier in the pandemic.

### Introduction

The infection fatality rate, the probability of dying for a person who is infected, is one of the most important features of the coronavirus disease 2019 (COVID-19) pandemic. The expected total mortality burden of COVID-19 is directly related to the infection fatality rate. Moreover,